ISSN (print) 0093-4666 © 2014. Mycotaxon, Ltd. ISSN (online) 2154-8889

MYCOTAXON

http://dx.doi.org/10.5248/127.213

Volume 127, pp. 213–219 *January–March 2014*

Three new species of *Pleurophragmium* from Yunnan, China

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Abstract — Three new species are described and illustrated: *Pleurophragmium ellipsoideum* from dead branches of *Bauhinia acuminata*, *P. yunnanense* from dead branches of *Machilus salicina*, and *P. clavatum* from dead branches of *Beilschmiedia percoriacea.* All three species were collected from tropical forests in Yunnan Province, China.

Key words — anamorphic fungi, taxonomy

Introduction

Costantin (1888) established *Pleurophragmium* for a single species, *P. bicolor* Costantin. The genus is characterized by well defined single unbranched conidiophores with sympodial, terminal and intercalary, integrated, polyblastic, denticulate conidiogenous cells with pointed denticles and solitary apical and lateral conidia with pointed bases (Hughes 1958; Ellis 1971, 1976). These characters separate *Pleurophragmium* from similar genera — *Cordana* Preuss, *Cacumisporium* Preuss, *Spiropes* Cif., *Pseudospiropes* M.B. Ellis, *Minimelanolocus* R.F. Castañeda & Heredia, and *Dactylaria* Sacc. More than 20 species have been accepted in *Pleurophragmium*.

Several mycological papers dealing with many new species from China have been published recently (Zhang et al. 2009a,b, 2011, 2012; Liang et al. 2010, 2011; Dai 2011, 2012; Ma et al. 2011a,b, 2012). We collected three undescribed species of *Pleurophragmium* in our study on conidial fungi on dead wood from tropical forests in Yunnan Province, China. The specimens are deposited in HSAUP (Herbarium of the Department of Plant Pathology, Shandong Agricultural University) and HMAS (Mycological Herbarium, Institute of Microbiology, Chinese Academy of Sciences).

Taxonomy

Pleurophragmium ellipsoideum L.G. Ma & X.G. Zhang, **sp. nov.** Fig. 1

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Differs from *Pleurophragmium miniumbonatum* by its shorter and wider pale brown conidia with rounded apices, from *P. acutum* by its larger pale brown conidia with more septa, and from *P. obcampanuloides* by its wider conidia with more septa.

Type: China, Yunnan Province: the Forbidden Forest of Banna, on dead branches of *Bauhinia acuminata* L. (*Caesalpiniaceae*), 17 Oct. 2008, L.G. Ma (**holotype** HSAUP H0042; **isotype** HMAS 243411).

Etymology: in reference to the ellipsoid conidial shape.

Fig. 1. *Pleurophragmium ellipsoideum* (holotype, HSAUP H0042).
a. Conidiophores and conidia. b. Conidiogenous cells with pointed denticles. c, d. Conidia.

Colonies on natural substratum effuse, brown. Mycelium partly immersed and partly superficial, composed of septate, branched, smooth, subhyaline to pale brown hyphae. Conidiophores well defined, single, unbranched, erect, straight or slightly flexuous, cylindrical, brown at the base, subhyaline to pale brown towards the apex, smooth, septate, thick-walled, 150–260 µm long, 2.5–3.5 µm wide at the apex, 3.5–6 µm wide at the base. Conidiogenous cells polyblastic, terminal and intercalary, integrated, sympodial, cylindrical, denticulate, smooth, thick-walled, subhyaline to pale brown, with numerous sharply pointed denticles towards the apex. Conidia solitary, apical and lateral, ellipsoid to obovoid, thick-walled, rounded at the apex, tapered to a point at the base, pale brown, smooth, 3-septate, 10–17 × 6.0–8.5 µm.

Notes: *Pleurophragmium ellipsoideum* is similar to *P. miniumbonatum* (R.F. Castañeda et al.) R.F. Castañeda, *P. acutum* (Grove) M.B. Ellis, and *P. obcampanuloides* Matsush. in conidial shape. However, *P. miniumbonatum* can be easily distinguished from *P. ellipsoideum* by its longer and narrower versicolored conidia with umbonate apices (16–19 × 6–7 µm; Heredia-Abarca et al. 2007). *Pleurophragmium acutum* differs by its smaller hyaline 0-septate conidia (6–12 × 2–3 µm; Ellis 1976), while the conidia of *P. obcampanuloides* are 2-septate and narrower (10–18 × 5–7 µm; Matsushima 1995).

Pleurophragmium yunnanense L.G. Ma & X.G. Zhang, **sp. nov.** Fig. 2

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Differs from *Pleurophragmium hippotrichoides* by its smooth conidia with more septa and from *P. ellipsoideum* by its broadly fusiform conidia with narrowed ends.

Type: China, Yunnan Province: the Forbidden Forest of Banna, on dead branches of *Machilus salicina* Hance (*Lauraceae*), 18 Oct. 2008, L.G. Ma (**holotype** HSAUP H0086; **isotype** HMAS 243412).

Etymology: in reference to the province where the taxon was found.

Colonies on natural substratum effuse, brown. Mycelium partly immersed and partly superficial, composed of septate, branched, smooth, subhyaline to pale brown hyphae. Conidiophores well defined, single, unbranched, erect, straight or slightly flexuous, cylindrical, brown at the base, subhyaline to pale brown towards the apex, smooth, septate, thick-walled, 185–270 µm long, 2.5–3.3 µm wide at the apex, 3.5–4.5 µm wide at the base. Conidiogenous cells polyblastic, terminal and intercalary, integrated, sympodial, cylindrical, denticulate, smooth, thick-walled, subhyaline to pale brown, with numerous sharply pointed denticles towards the apex. Conidia solitary, apical and lateral, broadly fusiform, thick-walled, narrowed at the ends, tapered to a point at the base, pale brown, smooth, (2)–3-septate, 10–15 × 6–7 µm.

Notes: *Pleurophragmium yunnanense* resembles *P. hippotrichoides* (Corda) M.B. Ellis in conidial shape, but *P. hippotrichoides* differs by its 0-septate

Fig. 2. *Pleurophragmium yunnanense* (holotype, HSAUP H0086).
a. Conidiophores and conidia. b. Conidiogenous cells with pointed denticles. c, d. Conidia.

verrucose conidia (Ellis 1976). *Pleurophragmium ellipsoideum* differs from *P. yunnanense* by its ellipsoid to obovoid conidia with rounded apices (see above).

Pleurophragmium clavatum L.G. Ma & X.G. Zhang, **sp. nov.** Fig. 3

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Differs from *Pleurophragmium tritici* by its longer yellowish brown 0-septate conidia and from *P. acutum* by its larger yellowish brown verrucose conidia.

Type: China, Yunnan Province: the Forbidden Forest of Banna, on dead branches of *Beilschmiedia percoriacea* C.K. Allen (*Lauraceae*), 31 Oct. 2011, L.G. Ma (**holotype** HSAUP H2090; **isotype** HMAS 243416).

Etymology: in reference to the clavate conidial shape.

Colonies on natural substratum effuse, brown. Mycelium partly immersed and partly superficial, composed of septate, branched, smooth, subhyaline to pale brown hyphae. Conidiophores well defined, single, unbranched, erect, straight or slightly flexuous, cylindrical, brown at the base, subhyaline to pale brown

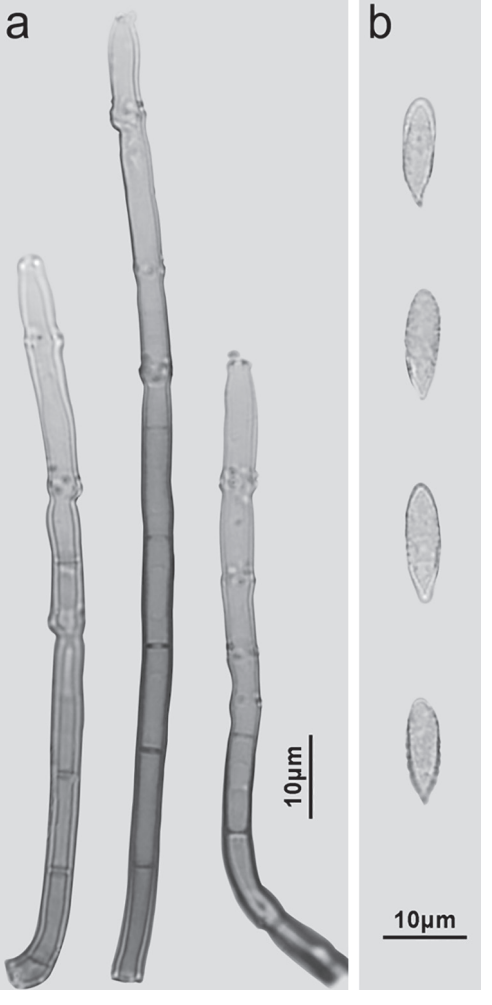

Fig. 3. *Pleurophragmium clavatum* (holotype, HSAUP H2090).
a. Conidiophores and conidiogenous cells. b. Conidia.

towards the apex, smooth, septate, thick-walled, 75–160 µm long, 3.3–4 µm wide. Conidiogenous cells polyblastic, terminal and intercalary, integrated, sympodial, cylindrical, denticulate, smooth, thick-walled, subhyaline to pale brown, with numerous sharply pointed denticles towards the apex. Conidia solitary, apical and lateral, clavate to fusiform, thick-walled, narrowed at the ends, tapered to a point at the base, yellowish brown, verrucose, 0-septate, 9.5–16.5 × 3.5–4.5 µm.

Notes: *Pleurophragmium clavatum* is similar to *P. tritici* M.B. Ellis and *P. acutum* in conidial shape. However, *P. acutum* can be separated by its smaller hyaline smooth conidia (6–12 × 2–3 µm; Ellis 1976) and *P. tritici* by its shorter subhyaline or straw-coloured 0–1-septate conidia (6–11 × 3–4 µm; Ellis 1976).

Acknowledgments

The authors are grateful to Dr. De-Wei Li and Dr. Bryce Kendrick for serving as pre-submission reviewers and for their valuable comments and suggestions. This project was supported by the National Natural Science Foundation of China (Nos. 31093440, 31230001) and the Ministry of Science and Technology of the People's Republic of China (No. 2006FY120100).

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